OHIO AGRICULTURAL

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HORTICULTURAL DEPARTMENT

SMALL FRUITS AND VEGETABLES

OFFICES AND EXPERIMENT GROUNDS
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Ohio Agricultural Experiment Station

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HORTICULTURAL DEPARTMENT

INTRODUCTORY

The testing of varieties of fruits and vegetables is an important part of the horticultural work of the Station, and is so conducted as to be of service to originators and to the general public. Varieties are received from originators and reports given to the owners from time to time, whenever desired. These partial reports are made public at the discretion of the Station, but are usually withheld until the variety is offered for sale, and in case it is not thought worthy of introduction by the owner no public report is made. Thus originators are aided in testing their productions, while the public has the advantage of early knowledge concerning new varieties, and is not burdened with reports of varieties that are unworthy of dissemination. Varieties that are sent for trial are not propagated beyond the requirements of experimentation, nor are plants, cuttings or scions of such varieties offered for sale, nor given away or exchanged, *without the consent of the owners*, but no responsibility will be assumed in case of theft, beyond a reasonable diligence to prevent it.

As far as possible all varieties are subjected to the same conditions, and no agreement will be entered to give special treatment in any case.

Varieties are not desired unless they are thought to have special merit. The Station cannot undertake to test long lists of seedlings, for the simple purpose of sifting out the undesirable varieties for the benefit of individuals. Unless a variety is likely to be disseminated, and thus become of public interest, it is not wanted, although no variety will be refused that is sent in good faith. Care should be taken in sending new varieties to label the packages distinctly with name or number of variety, and name of sender, together with post-office address. A letter or card should be sent at the same time, giving full particulars as to origin and percentage if known, and such other facts as may be of interest.

In addition to the testing of varieties, strains of varieties from different sources have been compared in case of vegetables. This work promises even greater usefulness than the testing of varieties proper. For this reason the Station is especially desirous of obtaining improved strains of varieties from commercial and private seed growers. Samples of this kind will receive careful attention and be given a thorough trial. In order the more quickly and certainly to arrive at results, some of the newer varieties of fruits and vegetables have been sent to growers in different parts of the state for trial. Blanks are sent in each case, in order to insure uniformity and completeness in the reports. This work will be extended, as means permit, but it is not contemplated to send plants and seeds to applicants indiscriminately. The plan is to secure the cooperation of specialists in different departments, and to furnish facilities for the thorough testing of special crops to those who are best qualified for the work, and have a desire to undertake it. Those who wish to undertake work of this kind can learn what is required by correspondence with the Station. Only a limited number of applicants can be served this season, and nothing will be sent except to those who give evidence that a careful trial and report will be made.

The Annual Report of the Station for 1887 cannot be issued in time to be of service this season, but the following extracts from it comprise some of the most important parts of the work:

SMALL FRUITS

STRAWBERRIES

Belmont.—Plants healthy and very vigorous, but so far as tested here, not productive. The fruit is beautiful in appearance, and of excellent quality, but it is doubtful if the variety can be profitably grown, except with high cultivation.

Bubach.—The plants are not only healthy and vigorous, but very prolific, while the fruit is of good form and color, but of medium quality. Withstood the drouth of last season almost perfectly, and made a very satisfactory growth The flowers are imperfect, but in most respects it is a very promising variety for commercial growers.

Bomba.—Not fruited here as yet. The first plants received were very weak and inferior, indicating lack of vigor, but a second lot was more satisfactory.

Carmichael.—Plants set in spring of 1887 made a good growth, although the season was unfavorable, but, of course, produced no

fruit. Judging from sample of fruit sent by the originator, it is quite firm, uniform in size and of good color, but not of the highest quality, although sufficiently good to meet the demands of most markets.

Covell.—The earliest variety tested at the Station, but too small for market purposes, and hardly high enough in quality to be recommended for family use.

Crimson Cluster.—Not fully tested here, but thus far does not promise well as to productiveness

Gold.—The plants are very vigorous, healthy, and uncommonly productive. The fruit is moderately firm, of good form and quality, but rather too light in color for some markets. On the whole it is very promising. The flowers are imperfect, which renders it objectionable for private gardens, but its quality more than atones for this defect.

Gandy.—Not fully tested here, but judging from its luxuriant growth it must be ranked as one of the promising new varieties.

Henderson.—Although of the highest quality, this variety must be discarded because of unproductiveness.

Itasca.—The bed in which plants of this variety were first planted was nearly destroyed by the strawberry root worm, hence a fair test has not been given it. The plants are quite healthy, showing but little sign of rust, and productive, while the fruit, though not large, is of excellent quality.

Jewel.—This variety needs a rich soil and good cultivation, and will not thrive without the best of care. Given what it requires it is one of the most profitable market sorts, but with careless, or even ordinary cultivation, it is likely to be disappointing.

Jessie.—This is one of the most satisfactory varieties of recent origin. The plants are vigorous, healthy and productive, while the fruit is large and showy. Some unfavorable reports have been heard concerning it, but it can hardly fail to take rank as a standard variety.

Lida.—This variety has given quite contradictory results here. The fruit is large and fine in appearance, but the plants are somewhat lacking in vigor.

May King.—This is now one of the established standard varieties. It does not quite equal the Crescent in productiveness, but is one of the best of the perfect flowering sorts to plant with that variety, being about the same in season of bloom and ripening

Ohio.—Does not differ from its parent, the Kentucky, except in having imperfect flowers, and being more productive. It is one of the best of the late varieties for market, although not of the highest quality.

Ontario.—This variety closely resembles the Sharpless, both in plant and fruit. It is in no way inferior to that variety, and perhaps excels it in quality. The berries are also more regular in form, and it is thought by some to be more productive. It is one of the best for home use, and in some sections is a profitable market variety.

Summit.—The plants are quite vigorous, but in some localities affected by rust. The berries are very large, uniform and showy. Although not equal in productiveness to some other varieties, it is one of the best varieties for amateurs and those who desire to grow fine berries.

Warfield.—Not fruited here, but plants set last spring have made a fine growth and promise a good crop.

RASPBERRIES

Carman.—Plants moderately vigorous, but quite prolific; fruit of medium size, of fine appearance and good quality. Season about the same, or a few days later than the Tyler. Although not fully tested it does not give evidence of superiority to the Tyler or Souhegan, but it is without doubt a valuable variety.

Crimson Beauty.—The plants of this variety have not always passed the winter well here, and are shy bearers. It is, however, one of the earliest of the red varieties, and the fruit is large and beautiful. It is thought by some to be a profitable market sort, but has not sustained that reputation generally.

Earhart.—Fruited here for the first time last season. The plants are vigorous and healthy, and apparently productive. It is probably one of the best of the everbearing sorts.

Golden Queen.—So far this variety has proven to be all that has been claimed for it. The plants are hardy, vigorous, healthy and productive, while the fruit is beautiful in appearance and of excellent quality. It is an excellent variety for home use, and might be profitably grown for some markets.

Hansell.—Plants not perfectly hardy here and only moderately productive. Although quite early it is much less profitable than the Turner, being but little earlier, and far less productive.

Hilborn.—This variety has thus far given entire satisfaction here, the plants being hardy, vigorous and productive, while the fruit is unsurpassed in appearance. It can hardly fail to take rank as one of the best second-early black-caps.

Johnston's Sweet.—This is another good second early black-cap, and is thought by some to excel all others in quality. It has shown no weakness here, except that the canes have been affected more than most other varieties by blight.

Marlboro.—Excelled by none in size and beauty of fruit. In some localities it shows lack of vigor, and is not all that can be desired here, but it is still one of the most profitable market varieties of the red sorts.

Nemaha.—Thus far this variety has not proven equal to the Gregg in productiveness and size of fruit. Not fully tested as to hardiness.

Rancocas.—Resembles the Hansell, and the remarks concering that variety will hold good for both in most respects.

Reliance.—Although not new, this variety is but little known, and not so well appreciated as it deserves. Its hardiness, productiveness and size of fruit place it among the foremost in point of profit as a market variety.

Shaffer.—This variety is deservedly popular for home use, and in some localities for market. It is unequalled for canning purposes.

Springfield.—This variety scarcely excels Davidson's Thornless in any important particular. It is of comparatively little value here.

Tyler (Souhegan).—The most reliable and profitable of early black caps. The fruit is small, and not of high quality, but sells at good prices because of its earliness.

BLACKBERRIES

But few varieties have been fully tested here. Snyder, Ancient Briton, Wallace, Taylor, Stone's Hardy and Agawam have been but little if any injured by cold of 12° below zero. Minnewaski, Erie, Early King, Bonanza, Nevada and Early Harvest have not been killed, but more or less injured by the same low temperature, while Topsy and Wilson Jr. have been killed to the ground. The Snyder is the only perfectly hardy variety that has been fully tested here. The Lucretia dewberry, although not of high quality, is valuable because of hardiness, productiveness, earliness and large showy fruit.

VEGETABLES

The experiments with vegetables have, for the most part, been limited to trials of varieties, strains of varieties and fertilizers. The varieties named in this bulletin are those concerning which there is most interest at present, together with a few old varieties for comparison.

Particular attention is called to the results with potato cuttings of different sizes. The total comparative yields may be taken as fair averages, and agree quite well with results obtained elsewhere. Not only here, but elsewhere, whole potatoes have almost invariably given larger yields than when cut, and the rate of yield has decreased with considerable uniformity as the size of the cuttings has been diminished. It is true, however, that this decrease has been largely confined to the small potatoes, but not wholly. In general it may be said that the smaller the cuttings the less the yield of both large and small potatoes. The cost of using whole potatoes for seed and the difficulty of securing a good stand with one-eye cuttings are objections to both extremes, that can be overcome except in rare cases. Two-eye cuttings are usually more satisfactory than larger or smaller, because of saving in seed on the one hand, and diminished risk of a poor stand on the other.

Concerning the results with fertilizers on potatoes it may be said that, although superphosphate makes a creditable showing, it has not in all cases been satisfactory, the variation being extremely wide; and essentially the same is true of bone-meal. Sulphate of potash, muriate of potash, sulphate of ammonia and nitrate of soda have in no case given any perceptible increase in yield. Complete chemical fertilizers and barnyard manure have in all cases given increased yields, but the application of the former has not always been attended with profit.

In the following tables are grouped the principal results obtained during the past season on potatoes, peas and tomatoes:

POTATOES—COMPARATIVE PRODUCTIVENESS AND EARLINESS.

Name of Variety	Total yield—Bushels per acre, 1887.	Average yield for three seasons—Bushels per acre.	Average percent of small potatoes.	Date of ripening, 1887.
Beauty of Hebron	108.6	187.4	15.	July 17
Charles Downing	147.7	210.4	20.	" 11
Early Albino	166.1	.....	12.	" 11
" Ohio	185.1	230.1	10.	" 11
" Rose	166.6	255.4	16.	" 27
" Standard	168.3	.....	12.	" 13
" Dawn	116.4	.....	10.	" 27
Lee's Favorite	189.5	266.8	20.	" 27
Stray Beauty	113.9	190.4	15.	" 11
Vanguard	149.6	214.7	17.	" 19
Cream of the Field	195.5	.....	17.	.....
Michigan	72.2	.....	27.	.....
Perfect Gem	99.4	188.3	27.	.....
Empire State	107.1	237.4	11.	.....
New York State	140 6	.....	14.	.....
Perfect Peachblow	159.8	.....	19.	.....

POTATOES—METHODS OF CUTTING.

	Year.	Total yield—Bushels per acre
One eye cuttings	1883	135.1
" "	1884	91.2
" "	1885	174.2
" "	1886	55.9
Two eye cuttings	1885	261.6
" "	1886	91.1
Cut in two lengthwise	1885	338.
" " "	1886	114.4
Whole potatoes	1883	263.7
" "	1884	172.
" "	1885	346.1
" "	1886	164.6
One eye cutting, average for two years (1885-'86)	.....	115.0
Two eye cuttings, average for two years (1885-'86)	.....	180.3
Cut in two lengthwise, average for two years (1885-'86)	.....	226.2
Whole potatoes, average for two years (1885-'86)	.....	255.3

POTATOES—TRIAL OF FERTILIZERS, AVERAGE FOR 1886 AND 1887.

Name of fertilizer.	Cost of Fertilizer per acre, at New York—wholesale price.	Av. yield of fertilized plots—Bushels per acre	Av. yield of six adjacent unfertilized plots—Bushels per acre.	Av. increase in yield of fertilized over unfertilized plots—Bushels per acre.	Av. percent of gain of fertilized over unfertilized plots.
Sulphate of Potash, 500 lbs. per acre....	$ 7.50	92.7	87.2	5.5	6.3
Muriate of Potash, 250 lbs. per acre.....	5.33	91.2	87.8	3.4	3.9
Superphosphate, 300 lbs. per acre.....	3.90	102.6	81.9	20.7	25.3
Sulphate of Ammonia, 400 lbs. per acre..	14.00	75.6	88.3	.....	.....
Mapes' Potato Manure, 600 lbs. per acre.	13.50	108.1	81.2	26.9	33.1
Stable manure, 10 tons per acre.....	.....	98.6	80.9	17.7	21.9
Nitrate of Soda, 600 lbs. per acre.....	15.00	60.7	74.5	.....	.....
Bone meal, 500 lbs per acre.....	7.50	89.3	75.7	13.6	18.

PEAS—COMPARATIVE EARLINESS

Name of Variety.	Seed obtained from—	First picking—Days from planting.	Percent of crop taken at first picking.	Number of days in bearing.
American Wonder.....	Gregory.....	58	95	14
Alaska.....	Cleveland....	54	88	.....
Bliss' Abundance.....	Rawson.....	68	60	16
Champion of England.....	Maule.....	68	56	10
Dwarf Marrowfat.....	Livingston...	68	46	10
Extra Early.....	Vick.....	54	97	15
Extra Early.....	Maule.....	58	40	.....
Extra Early.....	Landreth.....	54	89	10
First in the Market.....	Livingston...	54	75	15
First of All.....	Henderson...	54	89	15
King of the Dwarfs.....	Vick.....	58	81	15
Late Marrowfat.....	Livingston...	68	55	15
Market Garden.....	Horsford.....	68	58	20
McLean's Little Gem.....	Maule.....	58	40	18
Prince of Wales.....	Maule.....	68	80	.....
Philadelphia Extra Early...	Everitt.....	56	60	.....
Rural New Yorker.....	Cleveland....	54	88	.....
Stratagem	Livingston...	68	72	12
Telephone.....	Carter.....	68	91	17

TOMATOES—Comparative Earliness.

Name of Variety.	Seed obtained from—	Number picked from 4 plants.				
		Aug. 20	Aug. 30	Sept. 7	Sept. 20	Sept. 30
Acme	Landreth..	.....	11	16	32	18
Acme—From earliest selected seed.	Station ...	18	43	17	19	11
Advance Earliest	Maule	.....	11	3	59	17
Buist's Beauty	Buist.....	.....	7	20	27	51
Livingston's Beauty	Livingston	.....	13	33	21	20
Cardinal	Henderson	.....	17	16	42	50
Climax	Burpee....	.....	19	8	30	13
Livingston's Favorite	Dreer.....	6	4	.....	14	21
Favorite	Livingston	4	9	.....	34	.....
Mikado	Henderson	.....	.....	1	27	23
Perfection	Livingston	2	.....	7	33	.....

TOMATOES—Comparative Size and Productiveness.

Name of Variety.	Seed obtained from—	From four plants.			Average weight
		Whole number of sound tomatoes	Total weight of fruit		
			Lb.	*Oz.*	*Oz.*
Acme—From earliest selected seed.	Station....	75	19	1	4½
Advance Earliest	Maule.....	84	13	3	3
Buist's Beauty	Buist.....	101	31	2	4 7/8
Livingston's Beauty	Livingston	76	24	13	53-16
Cardinal	Henderson.	124	35	4	4¾
Climax	Burpee....	67	19	12	4⅝
Favorite	Livingston	107	21	6	3 3-16
Mikado	Henderson.	50	23	11	5⅝
Perfection	Livingston	40	12	12	3⅛

SUMMARY

(1) The Station is prepared to test new varieties and strains of varieties of fruits and vegetables, and such tests will be so conducted as to protect the interests both of originators and disseminators of such varieties and of the general public. Full particulars respecting this work will be sent on application.

(2) Of the newer varieties of strawberries thus far tested at this Station, the following have given the most promising results, viz.: Bubach, Gold, Jessie and Ohio.

The following seem worthy of further trial, viz.: Itasca, Jewell, Ontario, Summit and Warfield.

The following are classed as doubtful, or not sufficiently tested to justify an opinion, viz.: Belmont, Bomba, Carmichael, Covell, Crimson Cluster, Gandy, Henderson and Lida.

(3) Of the newer raspberries, the following are classed as promising, viz.: Carman, Earhart, Golden Queen, Hillborn and Johnston's Sweet.

The following are classed as doubtful, or not yet fully tested, viz.: Rancocas, Nemaha and Springfield.

Crimson Beauty and Hansell are found unsuited to the soil and climate of this Station.

(4) Of the newer potatoes the largest yield obtained at this Station over a period of three seasons (266.8 bushels per acre) has been from Lee's Favorite . Empire State and Early Ohio come next, ranking above Early Rose, which has yielded 225.4 bushels per acre for the same period.

(5) Larger yields of potatoes have invariably been obtained from planting whole than cut potatoes; but a portion, at least, of this increase has been offset by the greater cost of the seed and the larger percent of small potatoes in the produce.

(6) Complete fertilizers have given the largest increase in yield on potatoes. The application of phosphoric acid (in superphosphate and bone meal) appears to have been attended with profit, while that of nitrogen alone (in nitrate of soda and ammonia) has resulted in loss, as has also that of potash alone.

(7) The importance of careful selection of seed is forcibly shown in the experiments with tomatoes in which the Acme, selected with a view to earliness, for several seasons has outstripped other strains of that variety by about ten days.

W. J. GREEN, *Horticulturist.*